Zero Retries issue 0176 2024-11-01

Zero Retries is an independent newsletter promoting technological innovation that is occurring in Amateur Radio, and Amateur Radio as (literally) a license to experiment with and learn about radio technology. Radios are computers - with antennas! Now in its fourth year of publication, with 2200+ subscribers.

About Zero Retries

Steve Stroh N8GNJ, Editor

Jack Stroh, Late Night Assistant Editor Emeritus
Fiona and Shreky Stroh, Late Night Assistant Editors In Training

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Web version of this issue - https://www.zeroretries.org/p/zero-retries-0176

Request To Send

Commentary by Editor Steve Stroh N8GNJ

Paid Subscribers Update

My thanks to **Peter Neubauer KD0QXJ** for *renewing* as an **Annual Paid Subscriber** to Zero Retries this past week!

Financial support from Zero Retries readers is a significant vote of support for the continued publication of Zero Retries.

It's been an odd and busy week in our household, including the US Halloween "holiday", and publication day (Friday) is consumed with a sobering trip to the memorial service of another good friend. Thus I don't have a lot to report from either Zero Retries Research or N8GNJ Labs other than ***I cannot*** *wait* to be *done* with US presidential election season

and US Daylight Saving Time. Contrary to the majority of the US, the Pacific Northwet is not suffering from an overabundance of sunshine or abnormally warm weather for very late in October.

I'm still not done compiling my notes from Pacificon, so that's deferred yet again. But as K6KJN notes in his article, we discussed our experiences at Pacificon 2024 in Episode 8 of our Store & Forward podcast.

Have a great weekend, all of you co-conspirators in Zero Retries Interesting Amateur Radio activities!

Steve N8GNJ

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What's New at Digital Library of Amateur Radio & Communications - October 2024

By Kay Savetz K6KJN
Program Manager, Special Collections
Internet Archive, Digital Library of Amateur Radio & Communications
Zero Retries Pseudostaffer

***Editor's Note** - K6KJN was handicapped by the cybersecurity issues at Internet Archive and thus couldn't complete his October column until today. There will be another What's New at DLARC column for November, 2024 later this month.*

Happy November from DLARC World Headquarters. October was a month of both challenges and successes. Let's dive in.

On the positive end of the spectrum: my visit to Pacificon. It was my first time at that ham radio conference, which was first held in 1920. I had a booth for DLARC, where I got to tell hundreds of folks about the project. It didn't take long to hone my pitch down to just five enticing words: "FREE ONLINE HAM RADIO LIBRARY." I handed out flyers and stickers, gave two presentations, and enjoyed a libation with our esteemed editor Steve Stroh. (Steve and I talk a lot more about our reactions to Pacificon in the new episode of the Store & Forward podcast.)

On the more challenging edge of the spectrum, Internet Archive (where DLARC lives) was either completely down or terribly hobbled for most of the month after a denial of service attack and a hack. The site is getting back to normal now. As I write this, logins and uploads aren't enabled yet, so if things don't seem quite right when you look at the items that I mention below — they're working on it, try again a little later.

Material from Bob Cooper's estate continues to pour in. I recently added 215 issues of The 50 MHz DX Bulletin from Bob's collection. This was a newsletter dedicated to the understanding and utilization of long distance propagation in the 6-meter amateur radio band, founded by Harry Schools KA3B, then taken over by Victor Frank K6FV. Headlines include "Six Meters Opens to Antarctica!" (November 1993) and "R.I.P. Magic Band?" (April 2008.) The newsletter was published from 1990 through at least the end of 2008. We have most of 1991 through 2008, but we're missing all of 1990, and some of 1991, and post-2008 issues (if those were even published.) Do you have them?

Coop was a prolific writer and publisher himself. You can see some of his earliest work in a the new Bob Cooper's Early Publications collection. There you'll find issues of CB Horizons, DXing Horizons, VHF Horizons, Television Horizons, Communication Horizons, Video Communication Journal, and TV and Communications magazines. These publications span 1960 through 1964. In those four years, Cooper seemed to weave between topics and publication titles as he sought to find his footing and audience in the realm of radio and TV communications. I expect to have more to report from the Cooper trove next time.

In the meantime, we have Tedd Mirgliotta KB8NW to thank for a complete collection of every issue — all 1,795 issues — of the Ohio/Penn DX Bulletin. Focused on amateur radio DX news, Ohio/Penn DX Bulletin was one of the first free amateur radio bulletins to be distributed on packet clusters and the internet. It was published by Mirgliotta for an astounding 31 years — 1991 through 2022.

Here's the part that just warms my archivist heart: 232 of the issues in DLARC *have never been on the Internet*

before. Those first 232 issues were distributed on packet radio and dial-up BBSes, but that was so early in the birth of the Internet that they were never posted on the web. Earlier this year, Mirgliotta answered my request to dig into his stack of old hard drives. He found the earliest issues so they could be shared in the DLARC library.

I also added 109 issues of the Northern Ohio DX Association "Rag" newsletter from 2003 to the present. NODXA is an amateur radio DX club in the Cleveland, Ohio area.

Here's a fun newsletter covering the fringe end of radio. Numbers & Oddities, also known as The Spooks Newsletter, covers the fascinating world of numbers stations and all kinds of odd signals heard on HF. Sometimes reaching hundreds of pages per issue, the contributors are meticulous about notating the specifics of the weird stuff they hear on the air.

Last month I teased an item, a collection of vintage QSL Pennants and Radio Stickers. I'm exited to share the rest of this new collection with you: Chuck Vesei Shortwave Radio Artifacts. This collection has a great backstory: While he was in high school in the 1980s, Chuck Vesei was fascinated with shortwave radio and DXing. He listened to shortwave broadcasts from around the world and mailed away to the far-flung radio stations that he heard on his Uniden CR-201 radio. Those stations mailed Chuck broadcasting schedules, QSL cards, reception report forms, newsletters, stickers, pennants, and other ephemera. This is Chuck's collection of shortwave radio material, which he collected from 1984 to 1986. (Want more details? I wrote a longer version of the story for Internet Archive's blog.)

California Historical Radio Society donated to DLARC some material from the estate of Jim Maxwell, W6CF. Jim was once the ARRL's west coast director. The CHRS Jim Maxwell, W6CF Collection includes about three dozen items, an interesting mix of audio and videotapes, which we digitized. Among them is a 1994 video of Jim giving a presentation titled "The Golden Years of DX" at River City Amateur Radio Communications Society. It's one of a variety of bits of amateur radio history from the 1980s and 1990s.

If you prefer something a little older, I present this new addition to DLARC: 761 issues of The Telegraphic Journal and Electrical Review, spanning 1872 to 1891. We have every issue of this publication, scanned from microfilm. 150 years ago, the publication explored the development of battery power, advancements in the telegraph, and the growth of "telephonic communications." If you can get past language that is both old-timey and technical: "We were recently informed by a friend that certain well-known firms who were using the electric light in large works had found that the younger illuminant was cheaper to them than gas had been. This, of course, was an item of much interest to us, and we desired to obtain particulars and definite figures to lay before our readers." The pages are filled with fascinating history — like the 1883 Telegraphers' strike. The operators demanded higher salaries and "fewer hours of labour." Before the strike, a telegraph operator might earn 34 cents per hour; they wanted a 30% increase. Also, workers demanded that both sexes shall receive equal pay for equal work.

One last thing: we just added a pretty new marquee to the DLARC home page. This is a just-developed feature at Internet Archive, to help visitors get oriented to what could be an overwhelming amount of material. There's a new "Collection Highlights" section to marquee some of the most popular and interesting items in the library. Let me know what you think of it.

Digital Library of Amateur Radio & Communications is funded by a grant from Amateur Radio Digital Communications (ARDC) to create a free digital library for the radio community, researchers, educators, and students. If you have questions about the project or material to contribute, contact me at kay@archive.org.

DLARC want list: https://archive.org/details/dlarc-wantlist

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Revisiting the US Amateur Radio 219-220 MHz Band

By Steve Stroh N8GNJ

Open Research Institute (ORI) recently convened a videoconference to discuss a novel (in this era) approach to making the US Amateur Radio allocation at 219-220 MHz actually usable.

ORI's 219 MHz FCC Rules Revision Workshop was held 2024-10-29 from 10:00 - 11:00 Pacific.

*As background about what's previously been discussed about the 219-220 MHz band, see **Zero Retries 0053** - US 219-220 MHz Band. That discussion was more of an exploration of what's the current state of dysfunction with this band.*

***Also as background**… keep in mind that this band was allocated, both for its primary usage, and Amateur Radio's secondary usage, in the early 1980s, which predates commercial / civilian access to the Internet, and broadband Internet access via mobile telephone and mobile satellite technology and networks as we now know them. In that era, entities that wanted a ubiquitous voice and data radio communications network for their unique requirements had to build it themselves and create their own technology, which required "new", "virgin" spectrum.*

Disclaimer - I didn't take detailed notes from this discussion, and I haven't had the time to watch the recorded video. Thus most of what I'll write from this point forward is from memory, and I may get details wrong. If I do, I'll edit this article with corrections.

This workshop was convened by ORI with an interesting premise. If NextNav can submit a Petition for Rulemaking (FCC Docket 24-240) to radically reconfigure a major band (the 902-928 MHz band), why can't… *why shouldn't… Amateur Radio do the same thing* for a band such as 219-220 which has been unused because of too many restrictions since it was allocated?

Kudos to ORI for the imaginative leap of this possibility. This isn't something I would have imagined doing, but having heard the idea… it's brilliant and I'm in full support.

I missed most of the primer to this discussion which was a detail-filled slide deck The Haunted Band which was (confusingly) started well before the stated start time at 10:00. The event was recorded and is now available online:

The crux of the discussion after the presentation is that there are verifiable major issues with trying to comply with the FCC rules for operating in this band, especially given that it's been decades since it was allocated, memories have faded, and most importantly, technology and spectrum allocations of the primary allocated user have changed radically.

The "promise of this band" for US Amateur Radio is that it's allocated *solely* for "digital" operations. While "digital" is stated in the FCC regulations for this band, it's obvious that a more precise phrase would be *data* operations[1]. It's 1 MHz, with allowed channel sizes up to 100 kHz and potentially, point to point links could use the entire 1 MHz of the band for higher speed operation.

But, Amateur Radio's usage of this band is secondary to another service - the Inland Waterways Communications

System (IWCS)… which apparently no longer exists.

With that… things start to get really muddled:

- The IWCS as envisioned and allocated by the FCC never really got started.
- IWCS licenses were allocated to entities, some of who have continued to renew those licenses.
- Some licensees of IWCS have "leased" their licenses to other entities, which are not easy to discover (though such arrangements are supposed to be reported to the FCC and available for discovery in the FCC databases).
- It is difficult… nigh on impossible… to use the FCC databases to determine where "IWCS" stations are (alleged to be) located to determine whether Amateur Radio stations require notification per the FCC's requirement of
- ARRL was designated as the coordinator of Amateur Radio activity in 219-220 MHz, and without going into details (as I don't know them), it's obvious that over the decades, *ARRL's role as coordinator of Amateur Radio activity in 219-220 MHz simply has not worked as intended*.

The bottom line is that over the decades, individuals and groups have tried to go through the process of notification for operation in 219-220 MHz, and have been stymied at various points of complying… in understanding the requirements, using the FCC's databases for complying, and dealing with the ARRL.

As far as anyone participating in this discussion was aware, while there have been attempts to use the 219-220 MHz band…

There has been no (successful) Amateur Radio usage of the 219-220 MHz band since it was allocated by the FCC. No Amateur Radio usage… ever… in the decades since it was allocated.

The *intent* of the Amateur Radio 219-220 allocation was provide some relief from the reallocation of 220-220 MHz from Amateur Radio to commercial services. Within Amateur Radio at that time, 220-222 MHz was the portion of the (then) 220-225 MHz band that had been identified for use by those that envisioned high speed data links for the rapidly increasing amount of packet radio traffic. Such data links, using Amateur Radio technology of the time, required wide channels such as 100 kHz required for the WA4DSY 56k RF Modem.

When the FCC reallocated 220-222 MHz for a commercial service, *that* envisioned service didn't work out as intended… but that's another story. And, potentially, returning Amateur Radio as a *secondary* use of 220-222 MHz is another potential target for this process *if* this process proves out for 219-220 MHz.

Amateur Radio's usage of 219-220 MHz is secondary, thus to insure that the primary user's activities would be protected from harmful interference, a coordination / notification process was put into place involving the ARRL as the coordination body.

The biggest issue is that of coordination and identification of the various IWCS stations / networks (base stations plus mobile stations) has proven to be effectively impossible. There is much bad data, and often there is no data in the FCC's databases.

In the discussion, I made the point that "point to point operations" could conceivably be stretched to stations that were effectively "repeaters", such as a node in the middle of two other nodes, that acted as a store and forward relay.

The slide deck pointed out that equipment for 219-220 MHz isn't currently available other than Software Defined Receivers and Transceivers which have very, very low transmit power. However, the slide deck missed the existence of the BridgeCom Systems BCM-220 radio, which can:

- Tune to operate in 219-220 MHz
- Has a flat audio port suitable for higher speed data communications within a traditional 20 kHz channel

As with my previous discussion on 219-220 MHz, while the intent of the 219-220 MHz band was to use wideband / fast data communications systems, use of a 100 kHz channel, or a minimum data rate of 56 kbps, isn't *required*. Thus, to get started with use in the 219-220 MHz band could be satisfied, at least initially, with the use of a BCM-220.

There will be another online conference to continue this discussion scheduled for late November 2024 to discuss next steps. To participate in the next one, and be notified of additional developments, per the original ORI posting:

> Here's the link to RSVP (no you do not have to be an IEEE member to use vTools and sign up and attend):
>
> https://events.vtools.ieee.org/m/439290

Again, my compliments to ORI for imagining this possibility. Though it may ultimately not prove to be possible / practical to pull off actually getting Amateur Radio operation in 219-220 MHz… this should be fun and it's at least attempting something new and interesting, *technological innovation*, in Amateur Radio.

Leave a comment

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ZR > BEACON

By Steve Stroh N8GNJ

Short mentions of Zero Retries Interesting items.

TAPR Annual Meeting 2024

A few notes from attending TAPR's 2024 Annual Meeting on 2024-10-26 which was held on Zoom. The meeting was recorded, but no mention whether it would be made publicly available.

- Treasurer - $53k in checking, $228k in savings, but some of TAPR's funds are reserved for their fiscal sponsorship of an ARDC grant intended for Great Scott Gadgets. Currently there isn't separate accounting for TAPR's fiscal sponsorship(s) and (as I understood the situation as reported) TAPR's projects funded by grants.
- Board elections - Paul Elliott WB6CXC (who was appointed earlier this year to fill out voluntarily vacated Board position) and David McGaw N1HAC were elected to 3-year terms.
- Treasurer - Current Treasurer Tom Holmes N8ZM would like to transition his position to someone else, but no one stepped forward. Ed Dunlop N3ED volunteered to be Assistant Treasurer for one year, perhaps to transition to Treasurer.
- DCC - Dave Larsen KV0S proposed that TAPR can no longer produce the DCC. But follow-on discussion revealed that the TAPR Board can't bring itself "let go" of effective "custody" of the DCC, so the DCC (at least in name) will continue in limbo. I asked if TAPR was willing to act as a fiscal sponsor for an independent group (that isn't currently a 501 (c) (3))… and there was no answer. This was easily the issue discussed at most length in the entire meeting, with many suggestions.
- I asked about the APRS trademark that is currently held by TAPR, potentially to be transferred to the APRS Foundation - the response to this was so muddled that I couldn't make sense of it.
- I expressed my disappointment that TAPR has not filed comments in the last two "Request for Comments" by the FCC involving Amateur Radio. The response was that the (then) current Board has been too overloaded to tackle issues like that.

DigiPi v1.9 is Released

Craig Lamparter KM6LYW on the DigiPi email list:

https://digipi.org

DigiPi is an easy-to-use amateur radio data transceiver hotspot for Raspberry Pi. All radio data modes are easily accessible over wifi via your phone or web browser. Make FT8, JS8Call, APRS and packet modes work like any other mobile phone app. Hookup a DigiPi to your rig and instantly have access to radio SMS, EMail, and texting. Ultra-light, low-power makes it indispensable for Summit and Park operations. Let's make Ham radio relevant in the information age! DigiPi implements all the data modes we talk about at KM6LYW Radio YouTube channel and is available to Patrons of the channel! A radio license is generally required to use DigiPi, please lookup a local Ham Radio club and get licensed today!

v1.9 Changelog....

- Rewrite of GPIO, LED, buttons, display backend to use gpiod
- Updated Linux kernel and packages Initialize page directly supports radio-interface boards
    - DigiPi Hat
    - DigiRig
    - Fe-Pi with N7EBB board
    - Masters Communications DRA Pi Zero
- USB Radio DRA-Pi-Zero interface board audio fixed on Pi5
- Setup proper screen type on Initialize page
- Give USB audio device priority
- GPSD crash with ic705 fixed
- Direwolf rev'd to 1.8 with gpiod/Pi patches
- Lots of bug fixes, html, styles, ergonomics.

DigiPi is a great, cool system. I’m looking forward to getting online with it using several of the above hardware

interfaces.

ARDC VPN Service Announcement - Is It Ready Yet???

Adam Lewis KC7GDY on the ARDC beta-testers list:

> Hey there!
>
> I'm thrilled to see that the PoP's have a genuine need!
>
> October was a much-anticipated milestone.
>
> The feedback from our beta testers has highlighted some issues that need to be addressed before we confidently, albeit a bit nervously, hit the launch button.
>
> The PoP's are accessible to anyone on the internet. While we are still in beta and hinting at hamfests, we aim to build a small, knowledgeable user base—like you—who can help us work through bugs and assist others during the official release.
>
> Given that this system is quite open and anyone can technically access a free VPN, there are two key elements I would like to see completed before we go live:
>
> 1. **Implementing authentication to verify users as licensed hams.**
> 2. **Creating comprehensive documentation to guide users.**
>
> With our new access to a Portal testing platform, our next step will be to validate users against registered hams.
>
> Adam Lewis -kc7gdy
>
> IT & DevOps Manager
>
> ARDC

I'm really looking forward to ARDC's 44Net Virtual Private Network becoming available for widespread Amateur Radio use. Two real needs for this are those of us with commercial Internet whose providers use Carrier Grade Network Address Translation (CGNAT) such as Starlink, and tunnel services for AREDN which require a tunnel server with a reachable, static IP address.

A new release of Raspberry Pi OS

> **labwc – a new Wayland compositor**
>
> Today we are releasing a new version of Raspberry Pi OS. This version includes a significant change, albeit one that we hope most people won't even notice. So we thought we'd better tell you about it to make sure you do.
>
> …
>
> As a result, many Linux distributions are moving to a new windowing technology called Wayland. Wayland has many advantages over X, particularly performance. Under X, two separate applications help draw a window:
>
> the display server creates windows on the screen and gives applications a place to draw their content
>
> the window manager positions windows relative to each other and decorates windows with title bars and frames.

> Wayland combines these two functions into a single application called the compositor. Applications running on a Wayland system only need to talk to one thing, instead of two, to display a window. As you might imagine, this is a much more efficient way to draw application windows.

These changes make complete sense and seem to bring Raspberry Pi's native (very actively supported by Raspberry Pi) OS up to modern standards for the video system.

I'll guess that this update will break some Amateur Radio applications. For example, given DigiPi's primary attribute of running its video output remotely via web browser, I'll guess that there are challenges in this change that will require updates to DigiPi.

There were other significant improvements to Raspberry Pi OS in this release, and hopefully this is the worst of the "breakage" that can be expected to Amateur Radio apps going forward.

Leave a comment

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Join the *Fun* on Amateur Radio

If you're not yet licensed as an Amateur Radio Operator, and would like to join the fun by *literally having a license to experiment with radio technology*, check out
Join the Fun on Amateur Radio for some pointers.

Zero Retries Frequently Asked Questions (FAQs) — In development 2023-02.

Closing the Channel

In its mission to highlight technological innovation in Amateur Radio, promote Amateur Radio to techies as a literal license to experiment with radio technology, and make Amateur Radio more relevant to society in the 2020s and beyond, Zero Retries is published via email and web, and is available to everyone at no cost. Zero Retries is proud *not to participate* in the Amateur Radio Publishing Industrial Complex, which hides Amateur Radio content behind paywalls.

My ongoing ***Thanks*** to:

- Tina Stroh KD7WSF for, well, *everything!*
- ***Annual Founding Members*** **who generously support Zero Retries financially:**
  Founding Member 0000 - Steven Davidson K3FZT (Renewed 2024)

  Founding Member 0001 - Randy Smith WU2S (Renewed 2024)
  Founding Member 0002 - Chris Osburn KD7DVD (Renewed 2024)
  Founding Member 0003 - Don Rotolo N2IRZ (Renewed 2024)
  Founding Member 0004 - William Arcand W1WRA (Renewed 2024)
  Founding Member 0006 - Todd Willey KQ4FID (Renewed 2024)
  Founding Member 0007 - Merik Karman VK1DF / VK2MKZ (Renewed 2024 *with two Founding Member subscriptions!*)
  Founding Member 0008 - Prefers to Remain Anonymous 14 (Renewed 2024)
  Founding Member 0009 - Prefers to Remain Anonymous 19
  Founding Member 0011 - Rick Prelinger W6XBE (New 2024)
  Founding Member 0012 - Ryan Tolboom N2BP (New 2024)
- Numerous Annual and Monthly subscribers who also generously support Zero Retries financially!

Want to Support Zero Retries?

- The *most* effective way to support Zero Retries is to simply mention Zero Retries to your co-conspirators that

are also interested in knowing more about technological innovation that is occurring in Amateur Radio and encourage them to become a fellow subscriber.

- One particularly effective method of promoting Zero Retries is to add a mention of Zero Retries to your QRZ page (or other web presence) and include a link:

  https://www.zeroretries.org

- If you'd like to financially support Zero Retries, becoming a paid subscriber is *greatly* appreciated and helps offset expenses incurred in publishing Zero Retries. Paid subscriptions for Zero Retries are *entirely optional*, as explained in this special issue of ZR:
  Zero Retries Administrivia - Activating Payment Options.

These blogs and newsletters regularly feature Zero Retries Interesting content:

- Dan Romanchik KB6NU mentions "Zero Retries Interesting" topics so regularly on his blog (that I otherwise wouldn't know about) that I've bestowed on him the honorific of Pseudostaffer.
- Jeff Davis KE9V also mentions "Zero Retries Interesting" topics so regularly on his blog (that I otherwise wouldn't know about) that I've bestowed on him the honorific of Pseudostaffer.
- Amateur Radio Weekly by Cale Mooth K4HCK is a weekly anthology of links to interesting Amateur Radio stories that often feature "Zero Retires Interesting" topics.
- Experimental Radio News by Bennet Z. Kobb AK4AV discusses (in detail) Experimental (Part 5) licenses issued by the US FCC. It's a *must-read-now* for me!
- RTL-SDR Blog - *Excellent* coverage of Software Defined Radio units.
- TAPR Packet Status Register has been published continuously since 1982.
- Hot Iron - The Journal of the Constructor's Club is a delightful quarterly newsletter.
- Other Substack Amateur Radio newsletters recommended by Zero Retries.

These YouTube channels regularly feature Zero Retries Interesting content:

- HB9BLA Wireless by Andreas Spiess HB9BLA
- KM6LYW Radio by Craig Lamparter KM6LYW (home of the DigiPi project)
- Modern Ham by Billy Penley KN4MKB
- Tech Minds by Matthew Miller M0DQW

These podcasts regularly feature Zero Retries Interesting content:

- Store and Forward - a podcast about the past and future of amateur radio, by Kay Savetz K6KJN (curator of the Digital Library of Amateur Radio and Communications) and Steve Stroh N8GNJ (Editor of Zero Retries).
- Ham Radio Workbench by George Zafiropoulos KJ6VU (and friends)
- Foundations of Amateur Radio by Onno Benschop VK6FLAB

If you're reading this issue on the web and you'd like to see Zero Retries in your email Inbox every Friday afternoon, just click below to join ***2200+*** other subscribers:

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Social Media:

Zero Retries (N8GNJ) is on Mastodon — n8gnj@mastodon.radio — just click:

Zero Retries / N8GNJ on Mastodon

Zero Retries (N8GNJ) is also on Bluesky — @n8gnj — just click:

Zero Retries / N8GNJ on Bluesky

Email issues of Zero Retries are "instrumented" by Substack to gather basic statistics about opens, clicking links, etc.

More bits from Steve Stroh N8GNJ:

- **SuperPacket blog** — *Discussing new generations of Amateur Radio Data Communications - beyond Packet Radio (a precursor to Zero Retries)*
- **N8GNJ blog** — *Amateur Radio Station N8GNJ and the mad science experiments at N8GNJ Labs in Bellingham, Washington, USA*

Thanks for reading!
Steve Stroh N8GNJ / WRPS598 (He / Him / His)
These bits were handcrafted (by a mere human, not an Artificial Intelligence bot) in beautiful Bellingham (The City of Subdued Excitement), Washington, USA, and linked to the Internet via **Starlink *Satellite* Internet Access**.

2024-11-01

Blanket permission is granted for TAPR to use any Steve Stroh content in Zero Retries for the TAPR Packet Status Register (PSR) newsletter (I owe them from way back).

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Footnotes for this Issue

1

Which, of course, doesn't preclude transporting digital *voice* packets.